IOWA HIGHWAY RESEARCH BOARD (IHRB)
Minutes of May 20, 2016

Regular Board Members Present

A. Abu-Hawash
K. Jones
T. Nicholson
R. Knoche
R. Stutt
D. Miller
P. Hanley
W. Weiss
K. Mayberry
M. Parizek
T. Wipf

Alternate Board Members Present

J. Thorius

Members with No Representation

M. Kennerly
P. Assman

Secretary – V. Goetz

Visitors

Akiema Buchanan	Iowa Department of Transportation
Tammy Bailey	Iowa Department of Transportation
Francis Todey	Iowa Department of Transportation
Mike Nop	Iowa Department of Transportation
Wayne Sunday	Retired, Department of Transportation
Brent Phares	Iowa State University
Ashley Buss	Iowa State University
Chuck Jahren	Iowa State University
Alice Alipour	Iowa State University
David Jeong	Iowa State University
Kejin Wang	Iowa State University
Sri Sritharan	Iowa State University
Gordon Smith	Iowa Concrete Paving Association
Dan King	Iowa Concrete Paving Association
Lisa McDaniel	Federal Highway Administration
Bill Rosener	Asphalt Paving Association of Iowa
Bruce Braun	American Public Works Association
Peter Taylor	National Concrete Pavement Tech Center
Steve Tritsch	National Concrete Pavement Tech Center

The meeting was held at the Iowa Department of Transportation Ames Complex, Materials East/West Conference Room, on Friday, May 20, 2016. The meeting was called to order at 9:00 a.m. by Chairperson Ahmad Abu-Hawash with an initial number of 12 voting members/alternates at the table.

1. **Agenda review/modification**

2. **Motion to approve Minutes from the April 22, 2016 meeting**

   Motion to Approve by D. Miller; 2nd R. Knoche
   Motion carried with 12 Aye, 0 Nay, 0 Abstaining.

3. **Final Report** TR-648, *"Evaluation and Testing of a Lightweight Fine Aggregate Concrete Bridge Deck in Buchanan County, Iowa",* Peter Taylor, Iowa State University ($83,049).

BACKGROUND

Using saturated lightweight fine aggregate (LWFA) in concrete mixtures can replenish water that is depleted during cement hydration without influencing the water-to-cement (w/c) ratio. This process, known as internal curing (IC), can contribute to a more sustainable infrastructure by reducing shrinkage, increasing strength, lowering permeability, and providing other benefits.

As a result, the service life of concrete structures can be increased and the required cement content may be reduced. These benefits are most useful in bridge decks that are exposed to aggressive environments and are at a high risk of cracking.

OBJECTIVES

The objectives of this work were as follows:
- Evaluate the performance of LWFA concrete through laboratory and field testing
- Evaluate the structural performance of a concrete bridge deck made using LWFA through live load tests of the finished structure at the time of construction and after one year and two years of service
- Conduct a lifecycle cost and service life prediction

DISCUSION

Q. You reported the Saturated Lightweight Fine Aggregate was a $50 dollar difference (per cu yd of Concrete), what are your thoughts on this?
A. Material is $5 dollars so I would guess around $25 or $30 dollars.
Q. Do they require you to purchase a certain quantity?
A. For this bridge the entire quantity was donated by a manufacturer. The nearest supplier is in Missouri, so the highest cost to get it here would be the shipping.
Q. Did you mention what this light weight material is?
A. I think it is shale that is heated until it blows up (expanded shale); the specific gravity is about 1.8.

Motion to Approve by K. Jones; 2nd J. Thorius
Motion carried with 12 Aye, 0 Nay, 0 Abstaining

4. **RFP Proposals:**

   a. **IHRB-16-01,** "Effectiveness of Pavement Preservation Techniques", Dr. Ashley Buss, Iowa State University, ($120,000).

This proposal is approved with intent to be modified. Vanessa will contact PI to pull task 5 and have Phase II at a later time.

Motion to Approve by K. Jones; 2nd D. Miller
Motion carried with 12 Aye, 0 Nay, 0 Abstaining.

b. IHRB-16-01, "Evaluation of Effectiveness of Pavement Preservation Techniques in Iowa", David Lipper, University of Illinois, ($120,000)

Motion to Approve by K. Jones; 2nd D. Miller
Motion carried with 0 Aye, 12 Nay, 0 Abstaining.

c. IHRB-16-03, "Partially Grouted Revetment for Low Volume Road Bridges", Alice Alipour, Iowa State University, ($175,000)

Motion to Approve by M. Parizek; 2nd J. Thorius
Motion carried with 12 Aye, 0 Nay, 0 Abstaining.

d. IHRB-16-04, "Investigation of Exterior Girder Rotation and the Effect of Skew during Deck Placement", Brent Phares, Iowa State University, ($89,999)

Motion to Approve by D. Miller; 2nd R. Knoche
Motion carried with 12 Aye, 0 Nay, 0 Abstaining.

e. IHRB-16-08, "Evaluate, Modify and Adapt the Concrete Works Software for Iowa's Use", Kejin Wang, Iowa State Univeristy, ($261,168)

Motion to Approve by T. Nicholson; 2nd B. Braun
Motion carried with 12 Aye, 0 Nay, 0 Abstaining.

5. Peggi Knight stated that the RAC Region 3 has selected its top four research projects for 2016. Iowa has won this award four times in a row. This year's winning project for Iowa is "Development of Self-Cleaning Box culver Design: Phase II" which was funded by the Iowa Research Board. Each State submits a research project to be voted on around the country, each region submits four projects. Sixteen projects are submitted by the United States.

New Business

a. **Presentation:** UHPC Overlay Project/UHPC Workshop for locals, Sri Sritharan, Iowa State University.

This is the first time we have used UHPC for deck overlay. We were able to get a grant from FHWA for Buchanan County. Lafarge donated the material; it is a new mix for overlay. Brian Keierleber used the UHPC overlay on one of his bridges and has finished the overlay a few days ago; it will be open to traffic at the end of this week.

b. Funding Request: Delta Cost for TR-704: Performance Based Evaluation of Cost Effective Aggregate Options for Granular Roadways.

Motion to Approve by W. Weiss; 2nd K. Jones
Motion carried with 12 Aye, 0 Nay, 0 Abstaining.

c. Match Funding Request: Structural Health Monitoring Project, Brent Phares, Iowa State University.

US DOT grant opportunity (Advanced Transportation and Congestion Management Technologies Deployment Initiative) to kick start widespread deployment of structural health monitoring (SHM) system. Up to $12M per applicant is available for the deployment of advanced transportation and congestion management technologies with a required 50% State match.

Iowa Research Board recommended $50,000 a year for four years. If the other States do not match, Iowa Research Board will go up to $75,000 a year for four years.

Motion to Approve by M. Parizek; 2nd K. Jones
Motion carried with 12 Aye, 0 Nay, 0 Abstaining.

5. Adjourn

The next meeting of the Iowa Highway Research Board will be held Friday, July 29, 2016 in the East/West Materials Conference Room at the Iowa DOT. The meeting will begin promptly at 9 a.m.

Vanessa Goetz, IHRB Secretary